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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,286	02/20/2002	Peter R. Jepson	06160-1P67	6625
23416 7590 01/30/2009 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER				
ZHENG, LOIS L				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
01/30/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/079,286

**Applicant(s)**

JEPSON ET AL.

**Examiner**

LOIS ZHENG

**Art Unit**

1793

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26-39 is/are pending in the application.
- 4a) Of the above claim(s) 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-30 and 32-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

**DETAILED ACTION**

***Status of Claims***

1. New claim 39 is added in view of applicant's amendment filed 10 November 2008. Claim 31 remains withdrawn from consideration. Therefore, claims 26-30 and 32-39 are currently under examination.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 26-30 and 32-39 are rejected under 35 U.S.C. 103(a) as obvious over Segal 6,238,494 B1(Segal).

Segal teaches an metallic sputtering target with a minimum grain size different of less than about  $\pm 3\%$  and a dispersion in orientation content ratio of textures of no more than about  $\pm 4\%$ (abstract, claim 1) at any location of the target. The sputtering target has an average grain size of 6 microns(claim 18). Segal also teaches that the sputtering targets can be coupons(col. 5 line 45) and the sputtering targets comprise 99.95% tantalum(col. 5 lines 52-55). Segal also teaches that the sputtering target can also be made of other metals such as niobium (col. 1 lines 61-66).

Regarding claims 26-30 and 32-39, the tantalum or niobium sputtering target as taught by Segal reads on the claimed refractory metal plate comprising a thickness, a center and an edge. In addition, it is examiner's position that the tantalum target of

Segal would inherently have a mixture of grains with different crystallographic orientations including the claimed {100} and {111} crystallographic orientations. Since Segal teaches that the dispersion in texture orientation content ratio is no more than about  $\pm 4\%$  at any location of the target, one of ordinary skill in the art would have found it obvious that the tantalum or niobium sputtering target of Segal contains a constant mixture of grains with {100} and {111} crystallographic orientation, and the distribution of the texture orientation in the tantalum or niobium sputtering target of Segal varies by less than 30% both across any plane being orthogonal or diagonal to the thickness metal plate and across any thickness of the metal plate. Furthermore, Segal does not teach any predominant crystallographic orientations in the sputtering target. Therefore, the distribution of {100} and {111} textures orientation in the tantalum or niobium sputtering target of Segal is uniform through the thickness from the center of the plate to the edge of the plate without a predominately {100} and {111} orientation.

With respect to claimed purities as recited in claims 26, 28, 30, 34 and 36, Segal teaches that the sputtering target comprises 99.95% tantalum or niobium, which is very close to the claimed purity of 99.99% and 99.999%. Therefore, one of ordinary skill in the art would have found it obvious to use claimed 99.99% or 99.999% tantalum or niobium metal in forming the target of Segal with expected success since 99.95 and 99.99% tantalum are both high purity tantalum having similar properties and behavior under same processing conditions. It is always desirable to use higher purity material to achieve optimum sputtering target.

Furthermore, Segal further teaches that its sputtering target have an average grain size of 6 microns(claim 18), which meets the limitation of the claimed grain size of less than about 40 microns as recited in claims 26 and 38-39.

***Response to Arguments***

4. Applicant's arguments filed 10 November 2008 regarding Segal have been fully considered but they are not persuasive.

The examiner would like to express her appreciation of applicant's detail explanation of the relationship between grain texture and sputtering rate, as well as the publication of Zhang et al. J. Vac. Sci. Technol A 24(4) Jul/Aug 2006.

In the remarks, applicant argues that when an ingot is used as the raw material in the process of Segal, the resulting metal target would have non-uniform distribution of 110 and 111 grains.

Applicant's argument is merely considered as conclusive statement because such an allegation is not backed with factual evidence data demonstrating that the tantalum and niobium sputtering targets produced by the process of Segal does not possess the same uniform texture as claimed. In addition, Segal teaches that the dispersion in orientation content ratio of textures is less than about  $\pm 4\%$  at any location. Segal's disclosure does not reflect the large texture differences at different areas as discussed on page 8 of applicant's remarks. Therefore, applicant's argument is not persuasive and does not have probative value in absence of factual evidence data to back up applicant's arguments.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

LLZ

**Application Number****Application/Control No.**

10/079,286

**Examiner**

LOIS ZHENG

**Applicant(s)/Patent under  
Reexamination**

JEPSON ET AL.

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